Dell Technologies Reference Architecture for Wind River® Studio

An open, containerized edge infrastructure for carrier-grade workloads that is ready to meet your needs at any scale

Summary

The Dell Technologies Reference Architecture for Wind River Studio provides a validated solution for deploying a containerized edge infrastructure that delivers low latency, scalability and high availability, delivered on a small footprint. It's based on Dell EMC PowerEdge servers, Dell EMC PowerSwitch Networking and Wind River Studio software.

Solution Highlights

Dell Technologies Reference Architecture for Wind River Studio delivers cloud-native network architecture that features:

- Simplified Day 1 and Day 2 operations through ZTP and single-pane-of-glass host-level management

- Ultra-low latency with deterministic performance optimized per use case

- High availability with zero downtime for applications

- Scalability from one to many nodes from edge to core

- A small footprint allowing for more resources to run critical workloads

- Orchestration of fully automated upgrade deployments across geo-distributed cloud, with roll back and forward

- Fully integrated security by design

- A portfolio of telecom optimized servers and open networking solutions from an industry leader that is ready to meet your needs at any scale with options for carrier grade support

**From core to edge, build your distributed network with ease and confidence**

With the evolution to 5G, many communications service providers are moving away from integrated, purpose-built solutions to a disaggregated model for their distributed networks. It's a shift that brings new challenges — fear about the unknown, concerns over latency and the daunting task of managing hundreds of thousands of distributed nodes on a day-to-day basis.

The good news, though, is that you're not in this alone. Proven solutions exist today that can help you deploy and manage a modern, cost-effective, disaggregated infrastructure with confidence and ease — and still get the carrier-grade performance you expect. More specifically, Dell Technologies and Wind River have joined forces, combining our respective hardware and software expertise, to support CSPs with a containerized edge infrastructure that delivers the low latency, redundancy and high availability that carrier-grade workloads require today — and lower operational costs.

Performance and ease at the edge

Together, we deliver a validated reference architecture ideal for the distributed provider network. Found within this reference architecture is the combination of two key attributes: unique hardware and software technology that meets and exceeds the performance and detailed requirements of hosting 5G and edge workloads, and a suite of high-automation tools to reduce Day 1 and Day 2 operational effort.

The combination of 5G requirements paired with the automation of operational tools will enable CSPs worldwide to provide next-generation services and enable new revenue streams. These include hosting 5G vRAN infrastructure from the core to the edge, edge compute solutions for Industry 4.0, automated factory and warehousing, as well as autonomous vehicles, vehicle to vehicle (V2V) communications and drone management. Selection of the right next-generation virtualization infrastructure is a key enabler to hosting these edge compute applications.
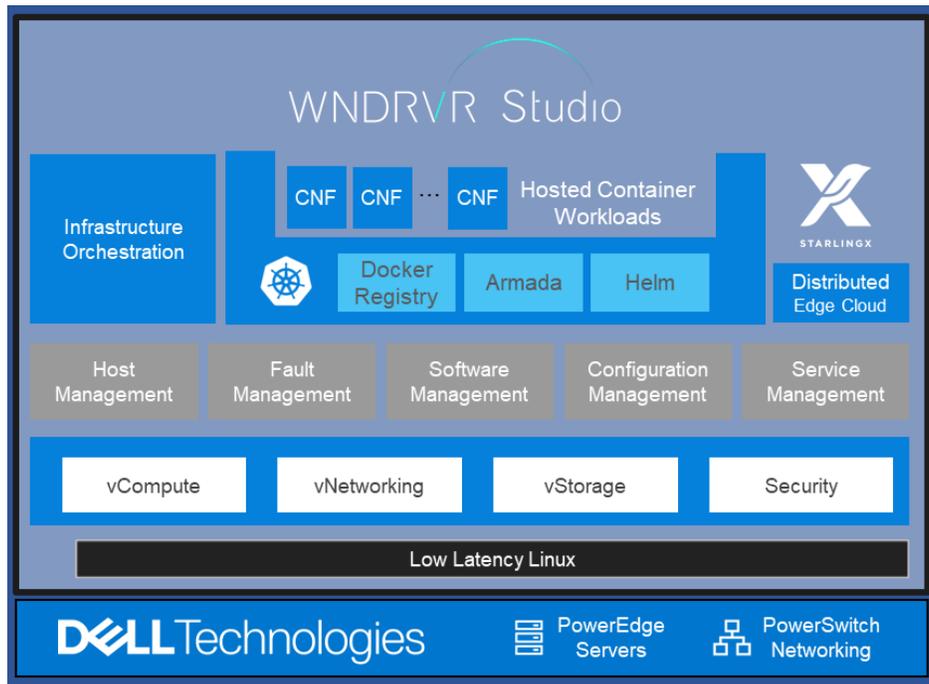
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The joint solution between Dell Technologies and Wind River includes the ability to perform true zero-touch, fully autonomous turn up of remote edge sub clouds — regardless of the number of nodes. The turn up is done from a bare metal state to a fully operational online system without human intervention. This is just one example the Day 1 capabilities provided to lower operational cost for the provider. Others include single-pane-of-glass management and the ability to scale to a full cloud in a single node for low-cost using the latest in cloud-native, container runtime and continuous integration and continuous delivery (CI/CD) capabilities.

This joint effort takes full advantage of essential Dell Technologies infrastructure and Wind River Studio, a production carrier-grade Kubernetes platform to manage your distributed edge cloud infrastructure. These assets are tightly integrated into a ready-to-deploy carrier-grade solution, leveraging the best technologies from both companies to enable next-generation functionality.

With extensive experience providing solutions to telecommunications customers, Wind River knows how to address your specific needs and concerns. Wind River Studio cloud platform is a complete open-source, telecommunications-first solution that's easy to deploy, run and manage. Upgrades can be orchestrated and automated to always keep your system current. The solution is scalable, allowing you to deploy a single compute node at the network edge and up to thousands of nodes in the core. You're always up and running with 99.9999% reliability. Industry-leading ultra-low latency translates into predictable, deterministic performance and added efficiency with resource pooling. You also gain clear visibility into your entire network via a single pane of glass

A solid infrastructure foundation from Dell Technologies

Running the Wind River Studio on Dell Technologies infrastructure brings added flexibility and scalability, zero-touch ease, and carrier-grade reliability to your edge solution. Dell Technologies offers a broad portfolio of servers and networking solutions that are designed specifically for 5G core, edge, and RAN environments. These solutions are engineered to deliver high-performance, simplified management, and exceptional reliability for CSPs.

Dell EMC PowerEdge Servers

The Dell EMC PowerEdge Servers deliver industry-leading performance, security, and simplicity of management. The Dell EMC PowerEdge line includes servers built specifically for telecom workloads including edge, core, and RAN applications that include options for extended service life to support long lifecycles in the field. The Dell EMC PowerEdge XR servers

offer ruggedized, NEBS 3 compliant compute with workload acceleration and faster memory that is specifically designed to thrive in the space constrained, rugged, and harsh environments at the far edge.

Remote Server Management and Automation

The integrated Dell Remote Access Controller (iDRAC) provides remote management of the telecom infrastructure including servers in the core, edge, and RAN. iDRAC simplifies network management and accelerates infrastructure deployment by allowing CSPs to remotely configure, manage, and automate the deployment from a single touch point leveraging industry standard management interfaces like Redfish.

Dell EMC PowerSwitch Networking Switches

Dell EMC PowerSwitch open networking switches support the high-density, high-capacity communications requirements of 5G cloud networks. Their open, flexible design allows CSPs to seamlessly move to a software-based network framework that features a best-of-breed ecosystem of open-source components.

Why choose Dell Technologies and Wind River?

Dell Technologies and Wind River have a solid partnership and long history of working together to provide solutions across different use cases and verticals — including telecommunications. Wind River has been an active participant in the telecom arena for nearly 40 years. Wind River Linux® solution already provides the software infrastructure for a number of 4G and 5G RAN deployments today. With Dell EMC PowerEdge servers and PowerSwitch Networking, you can expect to meet the performance and reliability requirements of today's demanding telecom networks. Together we're making it easier than ever to deploy and manage your distributed network with a validated architecture. Rely on Wind River and Dell Technologies to deliver a carrier-grade containerized infrastructure at the edge.

To learn more about Dell Technologies' solutions for the telecommunications industry, visit us at
www.delltechnologies.com/telecom

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